

**What is claimed is:**

1. A method for assembling carbon nanotubes and microprobes,  
comprising following steps:
  - 5       forming at least one microprobe on an substrate, the microprobe  
          being covered by a conductive layer;
  - exposing an tip of the microprobe to a solution having carbon  
          nanotubes spreading therein, the solution being furnished with an  
          electrode; and
  - 10       applying a predetermined voltage between the conductive layer and  
          the electrode, making at least one carbon nanotube to move and  
          attach onto the tip of the microprobe
2. The method for assembling carbon nanotubes and microprobe of claim  
1, wherein the surface area of the electrode exposed to the solution is  
15       larger than that of the tip of the microprobe.
3. The method for assembling carbon nanotubes and microprobe of claim  
1 further comprising a step of: providing ultrasonic oscillation to the  
solution for preventing the carbon nanotubes from gathering together.
4. The method for assembling carbon nanotubes and microprobe of claim  
20       1, further comprising a step of: covering a non-conductive material on  
the conductive layer and exposing only the potion of the conductive  
layer covering the tip of the microprobe.
5. The method for assembling carbon nanotubes and microprobe of claim  
1, wherein the substrate is made of silicon.
- 25   6. The method for assembling carbon nanotubes and microprobe of claim  
5, wherein the microprobe is formed on the substrate using  
semiconductor processing.
7. The method for assembling carbon nanotubes and microprobe of claim  
6, wherein the step of forming a microprobe on a substrate comprises  
30       following steps:
  - forming a silicon nitride layer and a mask layer successively on the

substrate, the mask layer having a plurality of openings disposed at predetermined positions thereof to expose the portion of the silicon nitride layer defined by the plural openings;

etching away the portion of the silicon nitride layer defined by the plural openings, and removing the mask layer;

applying anisotropic etching on the silicon nitride to form at least one silicon nitride microprobe on the substrate;

forming a conductive layer on the substrate covering at least the tip of the microprobe; and

forming a non-conductive layer covering a predetermined area of the conductive except for the portion of the conductive layer covering the tip of the microprobe.

8. The method for assembling carbon nanotubes and microprobe of claim 7, wherein the non-conductive layer is a photoresist.

9. The method for assembling carbon nanotubes and microprobe of claim 1, wherein the solution includes an anionic surfactant capable of attaching a layer of negative charges onto the surface of the carbon nanotubes, and the conductive layer is connected to the positive of a predefined power supply.

10. The method for assembling carbon nanotubes and microprobe as claimed in claim 1, wherein the solution is isopropyl alcohol.

11. A structure assembling carbon nanotubes and microprobes, comprising:

a substrate having at least a microprobe formed thereon;

a conductive layer covering at least a tip of the microprobe; and

at least one carbon nanotube attaching on the tip of the microprobe and parallel to the extending direction of the microprobe.

12. The structure assembling carbon nanotubes and microprobes of claim 11, wherein the substrate is made of silicon.

13. The structure assembling carbon nanotubes and microprobes of claim 11, wherein the microprobe is made of silicon nitrite.

14. The structure assembling carbon nanotubes and microprobes of claim 11, wherein a non-conductive material covers a predetermined area of the conductive layer except for the portion of the conductive layer covering the tip of the microprobe .
- 5 15. The structure assembling carbon nanotubes and microprobes of claim 14, wherein the non-conductive material is a photoresist.
16. The structure assembling carbon nanotubes and microprobes of claim 11, wherein the carbon nanotube is attached on the tip of the microprobe by Van der Waal's force.
- 10 17. An apparatus for assembling carbon nanotubes and microprobes, comprising:
- a solution, containing a plurality of carbon nanotubes dispersed and suspended therein;
- an electrode, disposed in the solution;
- 15 at least one microprobe, disposed in the solution and at least the tip of the microprobe being covered by a conductive layer; and
- a direct current power source, connecting the conductive layer and the electrode, capable of applying a predetermined voltage to drive the carbon nanotubes suspended in the solution to move toward the
- 20 conductive layer covering the tip of the microprobe and attach onto the same.
18. The apparatus for assembling carbon nanotubes and microprobes of claim 17, wherein the microprobe is formed on a substrate, and the conductive layer covers the surface of the substrate and the microprobe,
- 25 and a non-conductive layer further covers the conductive layer except for the portion of the conductive layer covering the tip of the microprobe.
19. The apparatus for assembling carbon nanotubes and microprobes of claim 17 further comprising an ultrasonic device for providing
- 30 ultrasonic oscillation to the solution so as to prevent the carbon nanotubes from gathering together.

20. The apparatus for assembling carbon nanotubes and microprobes of claim 17, wherein the solution includes an anionic surfactant capable of attaching a layer of negative charges onto the surface of the carbon nanotubes, and the conductive layer is connected to the positive of a predefined power supply.
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21. The apparatus for assembling carbon nanotubes and microprobes of claim 17, wherein the solution is isopropyl alcohol.